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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

KNOLL, CLIFFORD H

ART UNIT

PAPER NUMBER

2112

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Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/925,592

Applicant(s)

SIPPLE ET AL.

Examiner

Clifford H Knoll

Art Unit

2112

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 5, 8, 9, 11-15, and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, the “such inquiries and reports” (lines 5-6) is unclear because its relationship to “requests or status reports” and to the “inquiry generator” is confusing and not clearly recited. The “said CSWL inquiry” lacks a clear antecedent basis; its relationship to the “inquiry generator” cannot be determined. The “each particular lock request function” is unclear because its relationship to the “CSWL requests” previously recited cannot be determined.

In claim 5, the “non-associated cache” is unclear because it is not clear what structure limitation is intended to be recited.

In claim 8, the “(?)” is unclear.

In claim 9, “the apparatus through which to communicate with said other, non-associated mid-level caches said similar circuit apparatuses” is unclear because its relationship with the associated circuit apparatus is not clear.

In claim 11, the “lower priority” is not clear because it is cannot be determined what is being prioritized. The “said lock cache” lacks antecedent basis.

In claim 12, “said side door to side doors”, “said similar circuit apparatae [sic]”, “said non-associated mid-level caches” all lack antecedent basis.

In claim 13, “the radial” lacks antecedent basis. “The connection” lacks clear antecedent basis.

In claim 14, “the radial” lacks antecedent basis. “The connections” lacks clear antecedent basis.

In claim 15, the “said associated mid-level cache” recitations (lines 11, 20) lack clear antecedent basis, because it is not clear how it relates to the previously introduced “associated set of mid-level caches” or what determination from among the set is to be inferred.

In claim 20, the “interleaved basis” is not clear because it cannot be determined what relationship is intended to the prioritizing.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Arimilli (US 6625701).

Regarding claim 1, Arimilli discloses inquiry generator for generating signals containing either CSWL requests or status reports (e.g., col. 7, line 1-3, "M1") and providing, interpreting and receiving such inquiries and reports to/from another mid-level cache side door (e.g., col. 7, lines 13-15), CSWL cache memory for storing CSWLs to which the cache is mapped, and means for determining if a CSWL subject to the inquiry is present, and determining and processing the inquiry and generating a response (e.g., col. 7, line 15, "invalidated" referring to the mapping of a cache line), and a circuit for responding to a requesting local processor with the status received from a status report (e.g., col. 8, lines 2-5).

Regarding claim 2, Arimilli also discloses the inquiry processor is the said means of part "d" (e.g., col. 5, lines 35-37).

Regarding claim 3, Arimilli also discloses the inquiry processor has the comparator circuit (e.g., col. 7, lines 38-41).

Regarding claim 4, Arimilli also discloses a CSWL map directory containing addresses for each CSWL to which said associated mid-level cache is mapped and determining whether an inquiry is mapped to the cache (e.g., col. 5, lines 32-34).

Regarding claim 5, Arimilli also discloses a lock request generator for generating lock requests to send to other non-associated mid-level caches if the inquiry is not mapped to the associated mid-level cache (e.g., col. 7, lines 16-22).

Regarding claim 6, Arimilli also discloses a lock request generator for generating an inter-mid-level cache lock requests to send a lock function to the data determined to be mapped to another non-associated mid-level cache if the inquiry processor determines an inquiry is not mapped to the associated cache but to the non-associated cache (e.g., col. 7, lines 16-22).

Regarding claim 7, Arimilli also discloses determining from the map directory which other, non-associated mid-level cache to which to direct said lock request (e.g., col. 7, lines 31-32).

Regarding claim 8, Arimilli also discloses a status stripper circuit fashioning a signal from a status field in a CSWL after processing by the inquiry processor to supply information needed to provide a reply to said CSWL inquiry (e.g., col. 7, lines 16-19).

Regarding claim 9, Arimilli also discloses a circuit for receiving the inquiries and status reports from other non-associated mid-level caches having similar circuit apparatus to said claim 1 circuit apparatus through which to communicate with said

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other non-associated mid-level caches said similar circuit apparatuses (e.g., col. 7, lines 54-56).

Regarding claim 10, Arimilli also discloses an internal data channel (e.g., Figure 2, "TAGS").

Regarding claim 11, Arimilli also discloses the lock cache access having lower priority than the data cache access (e.g., col. 8, lines 1-2).

Regarding claim 12, Arimilli also discloses mid-level caches connected through said side door to side doors in each non-associated mid-level caches, wherein a radial communications pathway joins all such side doors (e.g., col. 3, lines 58-60).

Regarding claim 13, Arimilli also discloses the radial is a bus and the connection is a side door programmed to respond only to mapped CSWLs appearing on the bus (e.g., col. 5, lines 28-32).

Regarding claim 14, Arimilli also discloses the radial is a crossbar and the connections are configured by mapping of said CSWLs such that a given CSWL will map to a unique mid-level cache (e.g., col. 7, lines 9-10).

Regarding claim 15, Arimilli discloses receiving and interpreting a request (e.g., col. 5, line 67 – col. 6, line 3), if CSWL is in a storage circuit either setting the CSWL and returning an ownership indicia or returning the status to the requester (e.g., col. 7, lines 16-19), or if said CSWL is not in a storage circuit within associated mid-level cache forming a data request to retrieve and receiving the requested CSWL from a current owner (e.g., col. 7, lines 49-53), and if the lock request does not relate to a CSWL,

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passing the lock request as ordinary data within said the computer system (e.g., col. 7, lines 8-10).

Regarding claim 16, Arimilli also discloses where step C is performed by the receiving controller and the requested CSWL is retained by the associated mid-level cache (e.g., col. 7, lines 18-19).

Regarding claim 17, Arimilli also discloses recognizing the request received through a side door and determining it is a CSWL request (e.g., col. 7, lines 19-22).

Regarding claim 18, Arimilli also discloses setting a flag indicator by a processor to indicate that a software lock request is a CSWL request and recognizing the flag indicator by the receiving controller (e.g., col. 7, lines 14-15).

Regarding claim 19, Arimilli also discloses where step C will be performed after other functions (e.g., col.7, lines 31-35).

Regarding claim 20, Arimilli also discloses where the prioritizing step C to be performed at a lower priority than other functions on an interleaved basis (e.g., col. 7, lines 49-50).

Thus are claims 1-20 rejected.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Jacobs (US 6047358) and Misinai (US 5848241) both also


disclose side door communal lock inquiries. Similarly Vartti (US 5678026), Jain (US 5615167), and Mattina (US 2003/0041225) all disclose communal locks.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Clifford H Knoll whose telephone number is 703-305-8656. The examiner can normally be reached on M-F 0630-1500.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark H Rinehart can be reached on 703-305-4815. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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